

MONTHLY WEATHER REVIEW. The original reports are in metric measures; the conversions are by the Editor.

The barometer is 119 feet above sea level; its readings have been corrected by Professor Scherer for temperature and elevation, and also since July 1, 1898, for gravity; this latter correction is -0.064 inch; the thermometers are 6.7 feet above ground; the rain gauge, 7.2 feet above ground. The wind velocity is given in miles per hour.

The position of Port au Prince, Haiti, is latitude $18^{\circ} 34'$ N., longitude $72^{\circ} 21'$ W., or $4^{\text{h}} 49^{\text{m}}$ west of Greenwich. Additional records for this station are published in the annual volumes of the Central Meteorological Institute at Vienna.

Observations at Port au Prince, Haiti.

AUGUST, 1898.

Date.	Pressure.		Temperature.			Rel. humidity.	Wind.		Clouds.			Preceding 24 hours.		
	Local.	Sea level.	Dry.	Wet.	Dew-point.		Direction.	Velocity.	Kind.	Amount.	Direction.	Max.	Min.	Total rain.
1.....	Ins.	Ins.	o	o	o	%	se.	1	k	1	sw.	93.2	73.4	0.00
2.....	29.86	30.00	77.0	72.7	70.2	80	se.	1	cs	0	se.	92.8	72.5	0.22
3.....	29.81	29.93	78.4	72.9	69.4	75	e.	2	k	0	s.	92.1	71.6	0.51
4.....	29.85	29.97	76.8	74.3	72.0	86	ese.	1	k	2	e, wnw.	94.1	71.6	1.12
5.....	29.82	30.00	77.2	74.3	72.5	87	e.	0	ne.	0	ne.	93.6	74.5	0.05
6.....	29.87	29.99	77.2	69.1	63.5	65	ese.	3	cs	0	...	91.4	70.9	0.00
7.....	29.84	29.96	78.4	72.3	68.5	73	e.	0	...	0	...	91.9	72.3	0.81
8.....	29.87	29.99	80.8	73.8	60.4	70	se.	1	cs	1	...	90.5	75.6	0.00
9.....	29.85	29.97	79.3	71.6	66.7	67	se.	0	...	0	...	93.4	73.2	0.00
10.....	29.85	29.97	77.0	72.0	68.7	77	e.	0	...	0	...	95.9	71.2	0.00
11.....	29.82	29.95	77.4	72.1	68.9	76	e.	1	...	0	...	90.9	70.2	1.09
12.....	29.84	29.96	76.8	72.1	69.3	79	ese.	3	ks	10	...	91.8	74.1	0.00
13.....	29.82	29.94	79.3	73.2	69.4	73	ese.	0	...	0	...	91.4	73.0	0.00
14.....	29.86	29.98	75.6	73.6	72.5	90	...	0	k, n	10	...	90.3	72.0	0.44
15.....	29.84	29.96	77.5	73.9	71.8	83	...	0	k, cs	1	...	92.5	74.3	0.3
16.....	29.79	29.91	76.1	74.3	73.2	91	...	0	k, cs	4	...	89.8	72.0	0.80
17.....	29.76	29.88	77.5	71.6	68.0	73	e.	1	k	0	ene.	89.8	73.9	0.00
18.....	29.76	29.89	77.4	73.2	70.7	87	ese.	4	k	9	...	87.8	75.0	0.00
19.....	29.82	29.94	79.9	73.9	70.3	74	ese.	1	k	1	...	82.0	72.9	0.05
20.....	29.85	29.97	79.7	73.9	70.7	75	ese.	5	cs	1	...	91.4	72.9	T
21.....	29.85	29.97	78.8	72.5	70.7	79	e.	1	cs	1	...	87.6	73.2	T
22.....	29.82	29.94	75.7	70.9	67.8	77	se.	5	cs	1	nw.	87.1	71.8	0.28
23.....	29.84	29.97	77.9	72.0	68.2	73	e.	4	k	4	s.	91.2	75.2	0.23
24.....	29.90	30.02	78.1	70.2	64.9	66	ese.	4	cs	2	...	90.1	70.9	0.00
25.....	29.88	30.01	74.1	72.5	71.6	91	...	0	s	0	se.	91.9	70.9	0.06
26.....	29.83	29.95	77.2	74.7	73.2	88	...	0	cs	1	calm.	88.9	74.5	0.00
27.....	29.78	29.90	77.5	74.3	72.5	85	...	0	cs	7	sse-se.	88.7	72.3	T
28.....	29.82	29.94	78.3	73.9	71.6	87	e.	4	s	1	e.	89.1	73.8	0.00
29.....	29.86	29.98	78.1	71.4	67.1	70	e.	0	...	0	...	89.6	72.3	0.68
30.....	29.83	29.95	76.6	73.8	76.5	98	...	0	...	0	...	90.1	72.0	0.00
31.....	29.84	29.96	77.2	74.1	72.3	86	e.	1	...	0	...	91.0	72.1	0.06
Sum.....														6.15
Means	29.84	29.96	77.7	72.9	70.2	79.1	1.9					90.7	72.9	

NOTE.—According to the new form recently received from the Weather Bureau the above barometric pressure, reduced to sea level, has also received the correction -1.57 millimeters for reduction to standard gravity. This correction was first applied for the month of July, and will be so continued hereafter. —T. S.

[Apparently the gravity correction has also been applied by Professor Scherer to the barometric readings before reduction to sea level, so that in these columns we have the true local pressure as well as the true sea-level pressure. This is in accordance with the instructions on Form 1040, which read as follows:

"Under local pressure enter the observed reading of the barometer after correcting for all known sources of instrumental error, including capillarity, error of scale or zero point, temperature of scale or mercury, or of the vacuum box in the case of an aneroid, and the variations of the force of gravity from normal gravity. If any of these corrections are unknown or unattended to, please state that fact."—Ed.]

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Mariano Bárcena, Director, and Señor José Zendejas, vice-director, of the Central Meteorologico-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the *Boletín Mensual*; an abstract translated into English measures is here given in continuation of the similar tables published in the MONTHLY WEATHER REVIEW since 1896. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart IV.

REV—3

Mexican data for August, 1898.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
Durango (Seminario)	6,243	24.07	82.4	54.5	68.0	56	5.26	e	e.
Leon (Guanajuato)...	5,934	24.29	80.4	55.4	66.2	69	7.09	ene.	ese.
Linares (New Leon)...	1,189	28.66	96.8	71.6	84.2	69	4.41	sse.	se.
Magdalena (Sonora)...	2,618	...	93.9	79.0	87.4	...	9.25	s.	n.
Merida	50	29.91	96.4	69.1	83.0	75	5.50	ne.	n.
Mexico (Obs. Cent.)...	7,472	23.06	74.8	52.2	61.7	72	5.56	n.	ne.
Morelia (Seminario)...	6,401	23.97	77.0	56.5	64.2	83	5.61	ssw.	e.
Puebla	7,112	23.28	75.6	50.7	64.0	49	7.79	ese.	...
Saltillo	5,899	24.78	87.8	58.6	73.4	72	3.13	n.	nw.
Trejo (Hac de S. G.)...	...	...	75.7	66.2	...	...	9.54	ne.	...
Tuxpan (Vera Cruz)...	...	30.19	93.2	70.3	82.0	80	14.13	ne.	sw.
Zacatecas	8,015	22.53	78.0	45.7	60.3	72	4.13	e.	e.

Mexican data for September, 1898.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
Colima	...	...	88.9	68.7	77.7	...	...	...	...
Durango (Seminario)...	6,243	24.05	77.4	51.8	56.3	...	5.90	...	e.
Leon (Guanajuato)...	5,934	24.37	79.2	49.3	66.2	67	3.11	ene.	e.
Mazatlan	25	29.86	90.5	71.6	82.4	81	9.37	nw.	ne.
Merida (Yucatan)...	50	29.82	97.9	70.9	81.0	80	7.13	e.	e.
Mexico (Obs. Cent.)...	7,472	23.03	75.2	50.0	61.3	71	4.21	n.	ne.
Morelia (Seminario)...	6,401	23.93	74.1	54.3	63.9	81	5.44	sw.	ene., e.
Oaxaca	5,164	25.04	86.5	53.8	68.9	80	8.55	nw.	e.
Tuxpan (Vera Cruz)...	...	30.11	95.5	70.0	80.1	84	18.08	nw.	w.
Zacatecas	8,015	22.50	76.1	47.1	58.8	73	6.07	e.	e.
Zapotlan (Seminario)	5,078	...	79.3	60.8	68.4	76	12.40	se.	se.

METEOROLOGICAL OBSERVATIONS AT HACIENDA PERLA, PUERTO RICO.

By Capt. ARTHUR C. HANSARD.

The Weather Bureau is indebted to Capt. Arthur C. Hansard, Manager of the Hacienda Perla, Province of Numacao, Puerto Rico, for a meteorological record from which the accompanying climatological tables illustrating the weather of that province have been compiled by Mr. A. J. Henry, Chief of Division of Records and Meteorological Data. Hacienda Perla is on the northeastern shore of the island at an elevation of 460 feet above the sea and about an hour's drive therefrom, in latitude $18^{\circ} 21'$ N., longitude $65^{\circ} 42'$ W., approximately.

The thermometers in use — maximum and minimum — were verified at Kew and again at New York and San Juan. They are placed in an open balcony, 12.5 feet above ground, shaded from the sun and facing the prevailing wind (north-east).

The rain gauge is of standard make, exposed in the open with the top of receiver 3 feet and 2 inches above ground.

The average rainfall for the two and a half years was 123 inches, about twice as much as falls at San Juan at sea level. The record, although covering but a short time, exhibits many of the characteristics common to the West Indies. February and March are the driest months. Heavy rains begin in May, a month earlier than in western Cuba, and continue with a slight weakening in June and October until the end of the year.

The temperature at Hacienda Perla is slightly lower than at San Juan, as might be expected, on account of the greater elevation of the former. The highest point reached by the thermometer was 95° in May, 1898; the lowest, 61° in January, 1897, and February, 1898. On the maximum temperature Captain Hansard remarks: "The highest, 95° , during May, 1898, was phenomenal and occurred on only two days; in fact I have only noted 92° on two days, and 93° on one day."

MEAN TEMPERATURE.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
1896	75.3	71.2	74.2	76.3	78.5	80.0	79.2	80.0	80.1	80.2	76.3	73.2	76.9
1897	75.3	71.2	74.2	76.3	78.5	80.0	79.2	80.0	80.1	80.2	76.3	73.2	76.9
1898	74.4	73.1	74.2	75.2	79.0	78.2	76.5	79.0	79.2	76.3	75.6	73.2	76.9
Av'ge.	74.8	72.2	74.3	75.8	78.8	79.1	77.8	79.8	79.8	79.7	76.3	74.4	76.9

MEAN OF MAXIMUM TEMPERATURES.

1896	75.0	78.0	81.1	82.2	84.1	88.3	85.1	86.0	87.1	88.0	81.2	82.1	84.1
1897	80.3	78.0	81.1	82.2	84.1	88.3	85.1	86.0	87.1	88.0	81.2	82.1	84.1
1898	80.1	80.2	82.9	83.1	87.0	86.2	84.2	85.1	86.3	87.0	83.0	82.2	84.1
Av'ge.	78.5	83.6	82.0	82.6	85.5	87.2	84.6	86.1	87.1	87.5	82.1	82.2	84.1

MEAN OF MINIMUM TEMPERATURES.

1896	69.0	67.0	68.1	70.0	73.1	73.2	74.0	73.0	73.0	73.1	70.1	69.0	70.4
1897	66.1	67.0	68.1	70.0	73.1	73.2	74.0	73.0	73.0	73.1	70.1	69.0	70.4
1898	69.1	65.2	65.2	66.0	73.1	72.1	71.2	72.0	72.2	72.0	70.1	69.1	70.4
Av'ge.	68.1	66.1	66.6	68.0	72.6	72.6	72.6	73.7	72.6	72.6	70.1	69.0	70.4

ABSOLUTE EXTREMES: MAXIMUM TEMPERATURE.

1896	80	81	78	87	89	90	89	92	93	85	85	93	93
1897	86	84	84	87	89	90	89	92	90	91	86	84	92
1898	85	85	85	87	95	92	89	87	93	93	86	84	95
Max.	86	85	85	87	95	92	89	92	93	93	86	85	95

ABSOLUTE EXTREMES: MINIMUM TEMPERATURE.

1896	64	62	64	68	69	71	72	72	71	70	67	65	62
1897	61	65	65	68	69	71	72	72	71	71	65	65	61
1898	66	61	64	65	71	70	66	67	70	70	65	65	61
Min.	61	61	64	65	69	70	66	67	70	70	65	65	61

TOTAL RAINFALL.

1896	4.54	3.32	4.19	5.34	10.44	7.85	13.33	16.98	12.26	6.53	23.08	11.59	132.95
1897	13.16	2.87	3.67	13.73	32.80	3.93	10.45	7.62	10.36	11.56	16.17	9.77	130.18
1898	6.81	2.50	5.27	2.98	7.62	8.34	18.40	12.87	9.93	9.04	19.62	10.68	133.39
Av'ge.	8.17	2.90	4.38	7.35	16.98	6.87	14.06	12.49	10.85	9.04	19.62	10.68	133.39

NUMBER OF DAYS WITH .01 INCH OR MORE OF RAIN.

1896	21	16	23	17	26	21	30	24	25	23	28	26	279
1897	19	12	12	17	26	16	25	22	20	21	28	27	245
1898	20	13	17	15	12	18	26	15	20	22	28	26	251
Av'ge.	20	14	17	16	21	18	27	20	22	22	28	26	251

GREATEST RAINFALL IN 24 CONSECUTIVE HOURS.

1896	0.59	0.80	1.05	1.56	1.91	2.31	3.65	8.70	2.12	1.56	5.45	1.24	.....
1897	6.20	0.61	1.30	2.80	4.13	1.38	1.76	1.90	1.91	2.00	4.32	1.07	.....
1898	1.10	0.83	1.37	0.72	2.30	3.40	2.61	4.20	2.71	2.00	5.45	1.24	.....
Max.	6.20	0.83	1.37	2.80	4.13	3.49	3.65	8.70	2.71	2.00	5.45	1.24	.....

OBSERVATIONS AT RIVAS, NICARAGUA.

The records contributed for many years by Dr. Earl Flint, at Rivas, Nicaragua, include barometric readings. His present station is at 11° 26' N., 85° 47' W. The observations at 7:17 a. m., local time are simultaneous with Greenwich 1 p. m. The altitude of his barometer is 36 meters above sea level, but until the barometer has been compared with a standard it seems hardly necessary to publish the daily readings. The wind force is recorded on the Beaufort scale, 0-12. When cloudiness is less than $\frac{1}{10}$, the letter "F," or "Few," is recorded.

This station is situated on the western shore of Lake Nicaragua, not far from the eastern end of the western division of the Nicaragua Canal. The volcano Ometepe, on an island in Lake Nicaragua, is about 10 miles northeast of the station. Mr. Flint's records occasionally mention the presence of clouds in the early morning on the summit of this mountain.

Observations at Rivas, Nicaragua, August, 1898.

OBSERVATIONS AT 7 A. M. LOCAL (8 A. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.			Daily rainfall.
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.	
1	78	75	ne.	0	ck.	4	ne.	.....	.....	.....	0.00
2	79	75	ne.	0	ck.	6	ne.	.....	.....	.....	0.00
3	78.5	73	ne.	1	.....	.....	.....	ks.	3	ne.	1.00
4	78	73	se.	0	.....	.....	.....	k.	7	se.	0.00
5	78	74	se.	0	.....	.....	.....	k.	10	se.	0.53
6	77	74	sw.	0	ck.	7	se.	.....	.....	.....	0.00
7	79	75	se.	2	ck.	10	se.	.....	.....	.....	0.80
8	79	73	se.	2	.....	.....	.....	k.	Few	se.	0.00
9	79	73	se.	1	c.	3	sw.	k.	7	se.	0.00
10	79	73	se.	1	ck.	5	se.	.....	.....	.....	0.00
11	78	73	se.	0	c.	4	se.	k.	4	se.	0.20
12	78	73	se.	0	c.	10	se.	k.	10	se.	0.00
13	78	75	se.	1	ck.	7	se.	k.	7	se.	1.71
14	75	74	se.	0	ck.	7	se.	k.	5	se.	0.80
15	75	73	se.	0	.....	.....	.....	k.	5	se.	0.08
16	77	74	se.	0	ck.	Few	ne.	.....	.....	.....	0.00
17	78	75	se.	0	.....	.....	.....	n.	10	se.	0.00
18	77	73	se.	0	c.	6	se.	.....	.....	.....	0.00
19	77	73	se.	0	c.	1	se.	.....	.....	.....	0.00
20	77	74	se.	0	.....	.....	.....	k.	7	se.	0.00
21	75.5	73	sw.	0	.....	.....	.....	n.	10	sw.	3.15
22	76	73	se.	0	.....	.....	.....	k.	5	se.	0.40
23	77.5	73	se.	0	ck.	9	se.	.....	.....	.....	0.60
24	78	74	se.	1	.....	.....	.....	ks.	6	se.	0.04
25	78	74	se.	0	.....	.....	.....	ks.	10	se.	0.37
26	76.5	75	se.	0	ck.	5	se.	.....	.....	.....	0.00
27	76	74	s.	0	.....	.....	.....	k.	10	se.	0.00
28	76	73	sw.	0	ck.	10	se.	.....	.....	.....	0.40
29	75	73	se.	0	.....	.....	.....	n.	10	se.	1.77
30	77	74	se.	2	c.	7	se.	.....	.....	.....	0.00
31	78	74	sw.	1	c.	10	se.	.....	.....	.....	0.00
Means	77.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.85

OBSERVATIONS AT 8 P. M. LOCAL (9 P. M. EASTERN STANDARD) TIME.

Date.	Temperature.		Wind.		Upper clouds.			Lower clouds.		
	Air.	Dew-point.	Direction.	Force.	Kind.	Amount.	Direction from.	Kind.	Amount.	Direction from.
1	78.5	74	ne.	1	.....	.....	.....	ks.	10	ne.
2	75	74	ne.	1	c.	10	ne.	.....	.....	.....
3	73	73	se.	0	.....	.....	.....	k.	9	se.
4	77	73	se.	0	.....	.....	.....	k.	10	se.
5	78.5	74	se.	0	.....	.....	.....	k.	10	se.
6	78	75	se.	0	.....	.....	.....	k.	10	se.
7	78	75	se.	0	.....	.....	.....	k.	10	se.
8	79	75	se.	2	cs.	10	se.	k.	10	se.
9	79	74	se.	1	.....	.....	.....	ks.	10	se.
10	79	75	se.	0	.....	.....	.....	ks.	10	se.
11	79	76	se.	1	.....	.....	.....	ks.	10	se.
12	78	75	se.	1	.....	.....	.....	k.	10	se.
13	75	74	s.	1	.....	.....	.....	k.	10	s.
14	76	73	se.	1	.....	.....	.....	k.	10	se.
15	77	73	se.	1	.....	.....	.....	k.	10	se.
16	79	75	se.	0	.....	.....	.....	k.	5	se.
17	78	75	se.	0	.....	.....	.....	k.	10	se.
18	78	75	se.	0	.....	.....	.....	k.	4	se.
19	80	74	se.	0	.....	.....	.....	k.	10	se.
20	79	75	se.	0	.....	.....	.....	ks.	4	se.
21	78	75	sw.	0	.....	.....	.....	k.	10	se.
22	79	75	se.	0	.....	.....	.....	k.	Few	se.
23	77	73	se.	0	.....	.....	.....	k.	10	se.
24	78	75	se.	1	.....	.....	.....	k.	Few	se.
25	79	75	se.	0	c.	5	se.	.....	.....	.....
26	78	75	se.	0	.....	.....	.....	k.	10	se.
27	77	73	se.	0	ck.	10	se.	.....	.....	.....
28	78	75	se.	0	.....	.....	.....	ks.	10	se.
29	78	75	se.	0	ck.	Few	se.	.....	.....	.....
30	79	75	se.	0	ck.	Few	se.	.....	.....	.....
31	78	75	sw.	1	ck.	Few	se.	.....	.....	.....
Means	78.2	.....	.....	.....	.....	.....	.....	.....	.....	.....

QUANTITY OF RAINFALL CORRESPONDING TO GIVEN DEPTHS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

It is sometimes necessary to know the total quantity of water corresponding to given depths of rainfall over an acre or a square mile. An acre, it will be remembered, contains 43,560 square feet or 6,272,640 square inches, over which area